DOCUMENT RESUME

ED 291 704 SP 029 925

AUTHOR McPartland, James M.
TITLE Balancing High Quality Subject-Matter Instruction with Positive Teacher-Student Relations in the Middle Grades: Effects of Departmentalization, Tracking and Block Scheduling on Learning Environments. Report No. 15.
INSTITUTION Johns Hopkins Univ., Baltimore, Md.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Jun 87
GRANT OERI-G-86-0006
NOTE 38p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Ability Grouping; *Class Organization; Class Size; *Departments; Instructional Improvement; *Middle Schools; Secondary Education; *Self Contained Classrooms; Student Placement; *Teacher Student Relationship; *Time Blocks; Track System (Education)

ABSTRACT

This study tests the general hypothesis that there is no single best way to organize a middle school to meet the variety of needs of early adolescent students. Using data from a sample of 433 schools in the Pennsylvania Educational Quality Assessment, it examines the effects of self-contained classroom instruction and departmentalization on two generally agreed-upon educational goals--positive student-teacher relations and high quality subject-matter instruction. The study finds self-contained classroom instruction benefits student-teacher relations at a cost to high quality subject-matter instruction, while departmentalization improves the quality of instruction in specialized subject matter at a cost to student-teacher relations. The same types of effects are proposed by analogy for scheduling and grouping practices. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED291704

Center for Research On Elementary & Middle Schools

Report No. 15

June, 1987

BALANCING HIGH QUALITY SUBJECT-MATTER INSTRUCTION WITH POSITIVE TEACHER-STUDENT RELATIONS IN THE MIDDLE GRADES: EFFECTS OF DEPARTMENTALIZATION, TRACKING AND BLOCK SCHEDULING ON LEARNING ENVIRONMENTS

James M. McPartland

The Johns Hopkins University

SP 029 925

BEST COPY AVAILABLE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Center Staff

Edward L. McDill, Co-Director
James M. McPartland, Co-Director

Karl L. Alexander
Henry J. Becker
Barbara A. Bennett
Jomills H. Braddock II
Renee B. Castaneda
Barbara S. Colton
Russell L. Dawkins
Doris R. Entwisle
Joyce L. Epstein
Anna Marie Farnish
Denise C. Gottfredson
Gary D. Gottfredson
Edward J. Harsch
John H. Hollifield
Lois G. Hybl
Nancy L. Karweit
Melvin L. Kohn
Nancy A. Madden
Alejandro Portes
Robert E. Slavin
Carleton W. Sterling
Robert J. Stevens
Tammi J. Sweeney
Shi Chang Wu

Center Liaison

Rene Gonzalez, Office of Educational Research and Improvement

National Advisory Board

Patricia A. Bauch, Catholic University of America
Jere Brophy, Michigan State University
Jeanne S. Chall, Harvard University
James S. Coleman, University of Chicago
Edgar G. Epps, University of Chicago
Barbara Heyns, New York University
David W. Hornbeck, Maryland State Department of Education
Michael W. Kirst, Chair, Stanford University
Rebecca McAndrew, West Baltimore Middle School
Sharon P. Robinson, National Education Association

Balancing High Quality Subject-Matter Instruction with Positive Teacher-Student Relations in the Middle Grades: Effects of Departmentalization, Tracking and Block Scheduling on Learning Environments

Grant No. OERI-G-86-0006

James M. McPartland

Report No. 15

June 1987

Published by the Center for Research on Elementary and Middle Schools, supported as a national research and development center by funds from the Office of Educational Research and Improvement, U.S. Department of Education. The opinions expressed in this publication do not necessarily reflect the position or policy of the OERI, and no official endorsement should be inferred.

Center for Research on Elementary and Middle Schools
The Johns Hopkins University
3505 North Charles Street
Baltimore, Maryland 21218

Printed and assembled by:
VSP Industries
2440 West Belvedere Avenue
Baltimore, Maryland 21215

The Center

The mission of the Center for Research on Elementary and Middle Schools is to produce useful knowledge about how elementary and middle schools can foster growth in students' learning and development, to develop and evaluate practical methods for improving the effectiveness of elementary and middle schools based on existing and new research findings, and to develop and evaluate specific strategies to help schools implement effective research-based school and classroom practices.

The Center conducts its research in three program areas: (1) Elementary Schools, (2) Middle Schools, and (3) School Improvement.

The Elementary School Program

This program works from a strong existing research base to develop, evaluate, and disseminate effective elementary school and classroom practices; synthesizes current knowledge; and analyzes survey and descriptive data to expand the knowledge base in effective elementary education.

The Middle School Program

This program's research links current knowledge about early adolescence as a stage of human development to school organization and classroom policies and practices for effective middle schools. The major task is to establish a research base to identify specific problem areas and promising practices in middle schools that will contribute to effective policy decisions and the development of effective school and classroom practices.

School Improvement Program

This program focuses on improving the organizational performance of schools in adopting and adapting innovations and developing school capacity for change.

This report, prepared by the Middle School program, examines the effects of self-contained classroom instruction *vs*. departmentalization on student-teacher relations and quality of instruction. It is the second of three reports that (1) describe school structures, (2) examine how varying structures affect student outcomes, and (3) examine how effects on student outcomes may vary by student background and achievement level.

Abstract

This study tests the general hypothesis that there is no single best way to organize a middle school to meet the variety of needs of early adolescent students. Using data from a sample of 433 schools in the Pennsylvania Educational Quality Assessment, it examines the effects of self-contained classroom instruction and departmentalization on two generally agreed-upon educational goals -- positive student-teacher relations and high quality subject-matter instruction. The study finds self-contained classroom instruction benefits student-teacher relations at a cost to high quality subject-matter instruction, while departmentalization improves the quality of instruction in specialized subject matter at a cost to student-teacher relations. The same types of effects are proposed by analogy for scheduling and grouping practices.

Introduction

This paper tests the general hypothesis that there is no single best way to organize a middle school to meet the variety of needs of early adolescent students.

Instead of specific lists and blueprints that profess to offer a "best" way to organize middle school education, we need research-based ways of thinking about learning environments for this student age group that clarify how particular school organization features and classroom practices may foster or impede specific learning and human development goals. Then educational practitioners will be able to develop an organizational design for their middle grade students that combines organizational and instructional features to balance the strengths and weaknesses of different elements to address all major educational goals.

No single design would be best, because various combinations of organizational and instructional features could be made to work well. Knowledge is needed about the strengths and weaknesses of each feature so particular other features can be added to a middle school design to offer other strengths and compensate for weaknesses in other elements.

To clarify this approach of using a general framework to decide about elements of effective middle school design, we will investigate organizational factors that are related to two generally agreed upon educational goals at this school level. The two goals are high quality subject-matter instruction and positive teacher-student relations.

The first goal recognizes that the curriculum of the middle grades has moved beyond the elementary school focus on rudimentary mechanics of basic language and computational skills. The middle grade curriculum begins instruction in the analytic dimensions of comprehension and problem solving in reading and mathematics instruction, and in the more content-rich subjects such as science and social studies. This requires that teachers have a command of the curriculum content and be able to motivate young adolescent students to participate in appropriate learning activities.

The second goal recognizes that interpersonal relationships are very important for the personal development of early adolescents, especially in their dealings with adults. Early adolescents are undergoing key transitions in how their behavior is regulated. They are moving from externally regulated behavior, to more co-regulation of behavior shared with significant adults, on the path to mature self-regulated behavior (Carter, 1984; Elder, 1968; Hall, 1984). Structuring middle-school experiences to provide a foundation for greater self-reliance can assist a student's search at this age for a satisfactory self-image and for internal standards that can serve as personal guides for behavior. Most students cannot be left primarily on their own in middle grades without getting lost or

risking serious setbacks in their educational and personal development. Thus teacher-student relations during the middle grades must combine adult supervision of each individual youngster with a spirit of adult positive interest and concern that will be felt by each student.

This paper will test the general hypothesis that the organizational approaches that often best address one goal may not have the most positive effects on the other goal. Data on sixth-grade students, teachers and schools collected in Pennsylvania<*> will be used to investigate trade-offs in educational goals that may occur when particular decisions are made about how to organize instruction in the middle grades.

Middle School Staffing Practices and Educational Goals

Middle school staffing practices can vary along a continuum from the self-contained classroom -- in which a single teacher is in charge of all major subject instruction for a fixed-class group of students -- to the completely departmentalized approach -- in which each teacher specializes in a single subject matter area and instructs several different classes of students in this subject. Between these two extremes are several intermediate staffing patterns, such as semi-departmentalized -- in which a teacher instructs more than one class in more than one related subject (such as both math and science) but not in all major subjects; and team teaching -- in which two or more teachers provide instruction to a

---

<*>These data are described fully in McPartland, Coldiron and Braddock (1987), Report No. 14, Center for Research on Elementary and Middle Schools.

shared large class of students.

The staffing alternatives define the number of different teachers each student will encounter for instruction in major subjects. At one extreme, a particular student will have a single teacher for most of the day. At the other extreme, a student will change teachers for each period of the school day and receive instruction from five or more different teachers. At the intermediate points, a student will encounter two or three different teachers for instruction in the major subjects.

The specific hypothesis tested in this paper is that more highly departmentalized instruction will generally produce more high quality instruction but less positive teacher-student relationships and, vice versa, staffing practices that are more like the self-contained classroom will generate more positive interpersonal student relationships with teachers but at some cost in the quality of instruction in the more specialized or demanding subjects.

The reasoning for the hypothesis is straightforward. Departmentalized instruction is intended to allow teachers to specialize in particular subjects, so they develop more expert knowledge and design fewer but higher quality daily lessons. On the other hand, because departmentalization encourages a "subject-matter orientation" by teachers, there may be some weakening of teachers' "student orientation" -- their attention to the personal and academic needs of the "whole child." Moreover, the level of adult knowledge and close supervision of individual students should be higher for a teacher in a self-contained classroom who has a single class of students only than for a departmentalized teacher who instructs several different classes of students each day.

Empirical Evidence

Data collected in Pennsylvania in 1986 provide a research opportunity to test our hypothesis in the middle grades. As part of the state's annual Educational Quality Assessment (EQA), students completed achievement tests in several subject matter areas and answered survey questions about their perceptions of conditions in their school. Principals in the EQA schools also submitted information about staffing, scheduling and grouping practices at each grade. Information was also available on the enrollment size and socio-economic mix of students in each grade of each EQA school. We used these data to examine how the use of departmentalization in staffing is related to teacher-student relations and to instructional quality in grade 6.

Teacher-Student Relations

Fourteen questions were asked on the EQA student survey about teacher-student relationships. Table 1 lists these questions, the 12 response categories, and direction of scoring. School-wide measures were calculated for each item by using the percent of sixth-grade students in that school who responded in each response category. An overall scale of teacher-student relations was calculated for each school by adding up the percent of sixth-grade students in that school who gave the most positive response to each of the 14 items. We can use this scale to investigate whether schools that assign teachers to self-contained classrooms in the sixth grade actually have more positive teacher-student relations than schools that use departmentalized staffing for sixth-grade instruction. EQA provides a sample of 433 schools with a sixth grade for this investigation.

Table 2 reports the results of multiple regression analyses that estimate the relationship of teacher-student relations with self-contained classroom staffing, under different control conditions. Table 2 shows the relationship found for the 14-item scale of teacher-student relations and for five single questions from the scale. Three statistics are presented in Table 2 for each separate multiple regression analysis we performed: the unstandardized (b) and standardized (Beta) regression coefficients, which measure the relationship of the selected measure of teacher-student relations and whether the school uses self-contained classroom staffing, and the t-test statistic to indicate the significance level of the result<*>.

The first column of b, Beta and t statistics shows the results for analyses where no control variables were included in the equation. In this case, the standardized regression coefficient is equal to the zero-order correlation across the sample of 433 sixth-grade schools between the two variables (teacher-student relations and self-contained classes).

<*> Because unstandardized regression coefficients are expressed in the units of the original measures, each coefficient estimates the difference in average percent of sixth graders who respond positively to a measure of teacher-student relations between schools that use self-contained classroom staffing and those that use mixed or departmentalized staffing. (School averages of student reports have much less variance than individual student distributions, so different benchmarks should be used in judging the importance of particular percentage difference values.) The standardized regression coefficient is based on analyses that use measures which have been divided by their standard deviations (and are equivalent to path coefficients from non-recursive models), which can be used to make comparisons across different analyses performed on the sample. The t-statistic achieves statistical significance with large samples at the .001 level with values of at least 3.29, at the .01 level with values of at least 2.58, at the .05 level with values of at least 1.96, and at the .10 level with values of at least 1.65.

The next column of the three statistics (b, Beta, t) shows results from multiple regression analyses that include the average parents' education of the school's sixth graders as a control variable in the equation. Because parents' education is one of the best measures of students' family socio-economic status (SES), this control is added to statistically take into account differences between schools in students family background.

The final column of three statistics presents results from multiple regression analyses that add four more controls on differences in student enrollments, including (a) percent white of sixth-grade enrollment, (b) the average number of magazines and books at home as reported by sixth graders (another SES indicator), (c) a measure of the size of the community in which the students live (from small town to medium-sized city) and (d) the size of the sixth-grade class at the school (total grade six enrollment). These controls are added to test whether the relationship (between teacher-student relations and use of self-contained staffing) holds up when size factors and additional SES controls are applied.

The results reported in Table 2 provide strong evidence that sixth-grade teacher-student relations are more positive in schools that assign teachers to self-contained classrooms than in schools where departmentalized staffing is used. The initial relationships between staffing practices and measures of teacher-student relations, with no controls on other school differences, are statistically significant. Controlling on differences between schools in students' parental education does not diminish the initial relationships. Adding controls on school and community demography does

noticeably reduce the initial relationships, but the relationships still remain statistically significant. A closer look at the final multiple regression equation in our analyses indicates that the addition of the school size variable as a control is the main source of the reduction in the initial relationships<*>.

Both school size and school staffing patterns may be related to teacher-student relations for somewhat different reasons. For example, larger school size may contribute to the chance that a student will feel somewhat estranged from the teachers, and use of departmentalization may reduce staff sense of responsibility for individual students. Or, school size and school staffing may go hand-in-hand to produce the same processes related to teacher-student relations. For example, departmentalization requires a minimum enrollment size to be practical, and students are less likely to receive close adult supervision and support when departmentalization is used because an individual student is under the charge of several teachers, each of whom find it more difficult to establish close relationships with each student they teach.

Table 3 directly tests the interpretation that students who receive instruction from a larger number of teachers in the sixth grade face a roadblock to more positive teacher-student relations. Table 3 follows the same format as Table 2, but uses "the number of teachers per student" as the major variable in place of the measure of self-contained staffing used in Table 2. The results of Table 3 coincide with the results of Table 2, except that the Table 3 relationships are somewhat stronger. (The negative signs in Table 3

<*>Enrollment size is correlated 0.384 with the use of self-contained staffing practices in the sample of schools with grade 6.

reflect predicted relationships that are consistent with Table 2 results when the measure of number of teachers per student is used.)

As in Table 2, the initial relationships are reduced most by the addition of the sixth-grade enrollment size measure, which is highly correlated with the number of teachers per student (r=.55), but all the relationships remain statistically significant. The somewhat larger values in Table 3 compared to Table 2 support the interpretations that teacher responsibilities for large numbers of students reduce their ability to attend to the special needs of individual students, and specialized teachers are more likely to adopt a "subject-matter orientation" that emphasizes knowledge expertise than a "student orientation" that emphasizes concern for individual students.

Quality of Instruction

We have found positive effects on teacher-student relations of fewer teachers per student. But is there a negative trade-off in quality of instruction? The Pennsylvania EQA data have two types of information that can be used to investigate how a school's staffing practices may be related to instructional quality. First, students were asked to evaluate their learning experiences in five subjects -- reading, writing, arithmetic, social studies and science. Second, students' test scores are available on examinations in reading, writing, mathematics, science (two tests), social studies and analytical thinking. The availability of separate ratings and separate tests for several different subject-matter areas is very important for our question, because we would expect the benefits of teacher specialization on sixth-grade student learning to be

particularly evident in subjects such as science and history where teacher expert knowledge may require prior training beyond what is usually covered in elementary school teacher preparation courses. Also, we can examine relative average student test results on different subjects in the same school to see whether one subject is taught better than another.

Table 4 reports how average sixth-grade students' rating of different subjects in each school is related to the number of teachers per student used in the school for major subject instruction in grade 6. Table 4 presents results under different control conditions, following the same format used for Tables 2 and 3. Table 4 shows that the use of more specialized teachers is <u>not</u> significantly related to student ratings of their reading or writing instruction, but schools that use more specialized teachers do show statistically significant higher student ratings of instruction in arithmetic, social studies and science. The differences favoring sixth-grade schools that use a higher number of teachers per student are particularly large in science and social studies.

Table 4 results do not decrease in size as statistical controls are added; in fact, the positive relationship between student ratings of courses and number of teachers per student generally becomes more positive.

We also examined how student ratings of different courses is related to the self-contained classroom staffing measure we used in earlier tables and found results (not shown here) comparable to Table 4: students do <u>not</u> rate their instruction in science and social studies as highly in schools that assign each teacher to cover all major subjects in a self-contained class.

We interpret these findings that sixth-grade students rate their learning experiences in science and social studies more highly when instruction is provided by separate specialized teachers as direct evidence that instructional quality will tend to be higher in middle-grade schools that use departmentalized and specialized teachers, especially in subjects that go well beyond the pre-service language arts teacher training provided for elementary grade instruction.

This conclusion is partially confirmed by our analyses of sixth-grade student test score performance in the EQA sample. Table 5 reports results of multiple regression analyses of school averages of sixth-grade student performance on two science tests and one social studies test, under different statistical control conditions. Because these analyses are at the level of school averages, it is not appropriate to draw conclusions about individual student learning processes<*>. Also, because the EQA survey is not longitudinal, we cannot statistically control on test scores from the previous year and thus cannot be confident that available measures of the family background of students in the school is an adequate control of student inputs when we are examining school effects on academic achievement.

We can, however, measure differences between subject matter test averages in each school to investigate the school practices that influence the relative strength of the instructional program in

---

<*>It has been shown that relationships found at the aggregate level do not necessarily exist at the individual level, a condition sometimes called "the ecological fallacy." Effects on individual student test scores using the EQA data are reported in Becker (1987), Report No. 16, Center for Research on Elementary and Middle Schools.

different subjects. Thus we can examine how using a higher number of specialized teachers affects students' average test performance in science or social studies after statistically controlling on school averages in Reading and Math test performance. This gives us an estimate of the effects of specialized staffing on the relative strength of the learning environment in sixth-grade science or social studies.

Table 5 shows initial negative relationships between number of teachers per student and school average in science or social studies. But these relationships become positive when statistical controls are added on school averages in reading tests, and become more strongly positive when additional controls are used on school averages in math tests. For example, reading across the first row of Table 5, in which the dependent variable is the school average science test, we see that the negative relationship in the first set of three statistics (b, Beta, F) changes to a positive relationship when the average Reading Test is added as a control, and grows to a larger positive relationship when the average Math Test is added.

The results with additional controls are statistically significant for both science tests, but not for the social studies test, although the pattern of changes is the same. We interpret these findings as direct evidence that the use of higher numbers of specialized teachers for sixth-grade instruction significantly improves the relative quality of the instructional environment in science and perhaps in social studies.

Adding a final control on enrollment size (fourth column, Table 5) reduces the positive relationships obtained in the previous step.

This reduction comes from the correlation between school size and number of teachers per student, which makes it difficult to scientifically separate effects of one factor from another. It is possible that larger schools may have better instructional materials for science and social studies as well as more specialized teachers in these subjects, both of which contribute to higher quality learning environments. Because the relationship remains positive and statistically significant for one science test even with the final controls on school size, we do not change our overall conclusion that specialized teachers have a positive impact on the quality of learning environments in some major subjects.

Balancing or Compensating in Practice for Trade-Offs

Our finding that departmentalized staffing may weaken teacher-student relationships while strengthening instructional quality does not mean that a school should decide which educational goal is most important and then establish the staffing patterns to be used in the sixth grade. Middle schools must address both goals successfully. Thus, the trade-offs of extreme school staffing practices need to be (a) balanced by some intermediate practice between the extremes, and (b) compensated for by other school practices that address the weaknesses of each particular staffing pattern.

The EQA survey shows that staffing practices between the extremes of self-contained classrooms and fully departmentalized staffs are frequently found in the sixth grade. These mixed practices include semi-departmentalized and team-teaching arrangements, in which teachers offer instruction in more than one related subject (such as science and math) or share a fixed class of students with other

teachers. Such mixed practices often reduce the number of teachers per student to an intermediate number of two or three per student. Such practices may also offer both high quality instruction from subject-matter experts and positive teacher-student relations from teams that establish methods for addressing individual needs of students. Further research is needed to assess that actual balance of educational goals achieved by intermediate staffing practices.

Even when extreme staffing patterns are used, attention can be paid to both goals of teacher-student relations and instructional quality by adding practices that compensate for expected weaknesses.

For example, a departmentalized program offering high quality instruction in all major subjects can be made to work well for sixth graders if the school recognizes that other actions need to be taken to provide close teacher support and supervision for individual students. Such other actions might include strengthening the role of the homeroom teacher to assume responsibility for the individual needs of the "whole child" in the homeroom class, or assigning to each student a specific adult staff member as "advocate and mentor."

In self-contained classrooms, oriented toward supportive teacher-student relations, inservice activities and specialized support staff could be organized into a program to strengthen instructional quality of teachers who have not been well-trained in subjects such as science or history. In general, school officials who recognize the specific trade-offs in educational goals of their particular staffing practices can then plan actions to minimize the weaknesses in their own situtation.

Discussion

Our findings support the principle that there is no single best way to organize a middle school to meet the multiple educational goals for early adolescents, and point to some next steps in research that would help establish a framework for designing more successful practices in the middle grades.

Research on scheduling and grouping

We show that different staffing practices foster goals of positive teacher-student relations versus quality instruction. In an analogous way, potential trade-offs in educational goals can be hypothesized for other aspects of school organization, such as scheduling and grouping practices.

Scheduling practices involve whether students remain with the same classmates throughout the day for instruction in the major subjects, or change classmates as they are scheduled for instruction in different periods throughout the day. Grouping practices involve whether between-class tracking and/or within-class ability grouping are used to create homogeneous groups of students on the basis of past performance on tests or in particular subjects. Although prescriptions exist for a single "best" way to schedule and group early adolescents for instruction<*>, we hypothesize that important trade-offs in educational goals will occur in the use of each specific practice, and these trade-offs will need to be addressed by intermediate or compensating practices.

<*> Often the prescription is to keep students in intact classes for their entire program (block scheduling) and to avoid tracking and grouping into homogeneous instructional groups.

We hypothesize that scheduling practices can affect different dimensions of an early adolescent's relations with peers. Developmental psychologists have analyzed the importance of the peer group to early adolescent students, and have shown that many youngsters struggle to maintain a balance between finding friendly social support from their peers and developing independent means of withstanding peer pressure (Elder, 1968; Hill, 1980; Seltzer, 1982). Thus we expect that schools that use block scheduling to retain all-day intact classes will help students establish stable friendship groups, but students who are dependent on a more limited number of peer contacts will find it more difficult to take independent action. On the other hand, students who change classmates continuously throughout the day may be more likely to feel isolated and lack peer support, but at the same time develop greater personal strength to act autonomously. This hypothesis provides another example of a trade-off of effects due to a school organization practice, where the most educationally desireable outcome is a balance between peer group support and independence, each fostered by different extremes of school scheduling. Research is needed to examine these possibilities and to identify intermediate or compensating practices that may help foster both outcomes.

Instructional grouping is another school organization feature in which instructional quality and social development of students may be at odds under particular practices. A recent literature review of grouping practices in the elementary grades presents the arguments for and against setting up homogeneous student instructional groups and the evidence on effects of different grouping practices (Slavin, 1986). The main argument for homogeneous grouping is that

reducing the range of current student abilities allows a teacher to offer instruction that is neither too easy nor too difficult for most students in the group. Better targeting of the pace and level of instruction to meet actual student needs should offer higher quality learning activities that motivate students to work hard in all groups. The major arguments against homogeneous grouping focus on the classes or groups of low achievers that are created. Students in these groups are thought to lose confidence in themselves as learners, because the low teacher expectations often held for the lower groups become internalized by the students themselves and low academic self-esteem becomes "behaviorally contagious" among student groups which contain no peer models who achieve well in class.

The review of elementary school research finds no evidence to recommend extreme "tracking" practices that use a general ability or achievement test to set up separate classes of students that remain together for all instruction throughout the day. But some less extreme grouping practices were identified at the elementary grades that can be helpful to the learning of most students and minimize negative influences on the academic self-confidence of students whose achievement is behind. These grouping practices include using within-class ability groups rather than between-class tracks, and restricting the use of between-class homogeneous grouping to one or two major subjects. These same conclusions may not apply to middle grade students, where the heterogeneity of student abilities and needs may be greater than at earlier ages and where curriculum content may require successful learning of earlier skills. Research is needed in the middle grades to learn about the trade-offs from

alternative grouping practices for students at different levels of current achievement.

Research for a General Framework of Middle Grade Goals and Practices

We have discussed only a few educational goals and school practices for the middle grades. A much more complete picture is needed if research is to help educators in existing middle schools identify potential weaknesses in their current practices that could be addressed with added features, or to help educators who are designing a new middle school to establish practices that balance the multiple goals for the early adolescents to be served.

Several research tasks could help provide a more complete framework of trade-offs in middle school practices to achieve different educational goals. First, the multiple educational goals for middle grade students need to be identified in the context of the early adolescence stage of human development. Educational goals will surely include academic learning, personal development, and positive school experiences. Academic learning means the acquisition of specific knowledge and skills, and is closely tied to curriculum decisions for the middle grades. Personal development includes the growth in self-image and character traits needed for appropriate movement towards increased independence and responsibility at this age. Positive school experiences should help students come to value and enjoy learning and contributing to accomplishments shared with others. Personal development and positive school experiences may be tied to many features of school operations, including the relationships a student has with peers and adults in the school and the opportunities a student receives at school to participate in different activities.

Second, we need to identify the separate "building blocks" that can be worked into a design for a successful middle school learning environment. In addition to curriculum decisions, it is useful to think of the "building blocks" of school organization and classroom practice. School organization includes the staffing, scheduling and grouping practices that determine the particular teachers and students who are brought together for planned learning activities at specific times and places in the school. Classroom practice includes the tasks and roles established for teachers and students during instruction and learning activities, as well as the evaluation and reward systems tied to different behaviors. These building blocks of school organization and classroom instruction are important because they can be manipulated to influence the motivational and normative climates under which effective teachers can operate and under which the educational goals of the middle schools can be addressed.

Third, we need to understand how each particular building block component is linked to specific educational outcomes in the middle grades. Research is needed to answer the following questions: Which ways of organizing the school and delivering classroom instruction will usually best foster academic learning? Which ways will usually contribute most to students' personal development and positive school experiences? And, do these answers depend upon the particular mix of middle grade students involved?

This paper is offered as an example of how empirical research can help educators (a) understand how particular school practices may serve some educational goals at the expense of others and (b) think

about additional practices that can balance or compensate for weaknesses in school programs. We expect to contribute additional research evidence for fleshing out the general framework by further analyses of the EQA data and data which will soon be available from the National Assessment of Educational Progress that links school practices at the middle grades with student outcomes.

REFERENCES

Alexander, W.M., & George, P.S. (1981). The exemplary middle school. New York: Holt, Rinehart & Winston.

Anderson, R.H. (1973). Organizing and staffing the school. In J. Goodlad & H. Shane (Eds.), The elementary school in the United States: Seventy-second yearbook of the national society for the study of education. Chicago: University of Chicago Press.

Armstrong, D.G. (1977). Team teaching and academic achievement. Review of Educational Research, 47, 65-86.

Becker, H.J. (1987). Addressing the needs of different groups of early adolescents: Effects of varying school and classroom organizational practices on students from different social backgrounds and abilities. Report No. 16, Center for Research on Elementary and Middle Schools, The Johns Hopkins University.

Blyth, D.A., Simmons, R.G., & Bush, D. (1978). The transition into early adolescence: A longitudinal comparison of youth in two educational contexts. Sociology of Education, 51, 149-162.

Blyth, D.A., Hill, J.P., & Smyth, C. (1981). The influence of older adolescents: Do grade level arrangments make a difference in behaviors, attitudes and experiences? Journal of Early Adolescence, 1, 85-110.

Bolvin, J.O. (1982). Classroom organization. Encyclopedia of educational research, 265-274. New York: Macmillan.

Borg, W.R. (1965). Ability grouping in the public schools: A field study. Journal of Experimental Education, 34, 1-97.

Bossert, S.T. (1979). Task and social relationships in classrooms: A study of classroom organization and its consequences. New York: Cambridge University Press.

Braddock, J.H., Crain, R.L., & McPartland, J.M. (1984). A long-term view of school desegregation: Some recent studies of graduates as adults. Phi Delta Kappan, 66, 259-64.

Davis, H.S. (1971). Team teaching. Encyclopedia of education. 89-94. New York: Macmillan.

Education Research Service, Inc. (1983). Organization of the middle grades: A summary of research. Arlington, VA: Author.

Findley, W.G., & Bryan, M. (1971). Ability grouping: 1970 status, impact and alternatives. Athens, GA: Center for Educational Improvement, University of Georgia. (ERIC No. ED 060 595).

Heathers, G. (1969). Grouping. In R.L. Ebel (Ed.), Encyclopedia of eduational research (4th ed.), 559-570. New York: Macmillan.

Heller, M.P. (1971). Scheduling. Encyclopedia of education, volume 8, 13-18. New York: Macmillan.

Hillson, M. (1965). Change and innovation in elementary school organization. New York: Holt, Rinehart & Winston.

Keefe, J.W., Clark, D.C., Nickerson, N.C., & Valentine, J. (1983). The middle level principalship, volume II: The effective middle level principal. Reston, VA: National Association of Secondary School Principals.

Lipsitz, J. (1977). Growing up forgotten: A review of research and programs concerning early adolescence. Lexington, MA: Lexington Books.

Lipsitz, J. (1984). Successful schools for young adolescents. New Brunswick, NJ: Transaction Books.

McPartland, J.M., Coldiron, J.R. and Braddock, J.H. II (1987). A description of school structures and classroom practices in elementary, middle and secondary schools. Report No. 14, Center for Research on Elementary and Middle Schools, The Johns Hopkins University.

National Association of Secondary School Principals. (1985). An agenda for excellence at the middle level. Reston, VA: Author.

National Education Association. (1963). Planning and organization for teaching. Washington, DC: Author.

National Education Association, Research Division. (1968). Ability grouping. Research Summary 1968-S3. Washington, DC: Author.

Peterson, P.L., Wilkinson, L.C., & Hallinan, M. (Eds.). (1984). The social context of instruction. New York: Academic Press.

Reinhartz, J., & Beach, D.M. (1983). Improving middle school instruction. Washington, DC: National Education Association.

Shane, H.G. (1960). Grouping in the elementary school. Phi Delta Kappan, 41(7), 313-319.

Simmons, R.G. et al. (1979). Entry into early adolescence: The impact of school structure, puberty, and early dating on self-esteem. American Sociological Review, 44, 948-967.

Slavin, R.E., & Karweit, N.L. (1982). School organizational vs. developmental effects on attendance among young adolescents. Paper presented at the annual meeting of the American Psychological Association, Washington, DC.

Slavin, R.E. (1986). Ability grouping and student achievement in elementary schools: A best-evidence synthesis. Report No. 1. Center for Research on Elementary and Middle Schools, Johns Hopkins University.

Sterns, H.N. (1976). Team teaching: Cooperative organizational concept. In S.E. Goodman (Ed.), Handbook on contemporary education. New York: R.R. Bowker.

Valentine, J., Clark, D.C., Nickerson, N.C., & Keefe, J.W. (1981). The middle level principalship, volume II: A survey of middle level principals and programs. Reston, VA: National Association of Secondary School Principals.

Table 1

Fourteen EQA Student Survey Questions About Teacher-Student Relations (Questions scored in the negative direction are indicated by minus sign).

How do you feel (Very Happy; A Little Happy; A Little Unhappy; Very Unhappy)?

1. When you think about how much your teacher cares about your class?
2. When you talk to your teacher?
3. About asking your teacher for help?

How do you feel about the statement (Strongly Agree; Mostly Agree; Mostly Disagree; Strongly Disagree)?

4. My teachers usually tell me when they think I have done good work.
5. I feel that my teachers understand me.
6. My teachers sometimes make me feel that I cannot do good work (-).
7. My teachers don't think that what I say is important (-).
8. My teachers want better work from me than I can do (-).
9. I feel that my teachers like me.
10. My teachers think I have good ideas.
11. I'm often called upon by the teacher to help out in the classroom.
12. My teachers do no let me try out my ideas (-).
13. My teachers often make me feel that I can't do anything right (-).
14. When I make a mistake, my teachers correct me without hurting my feelings.

Table 2

Summary of Multiple Regression Analyses of Measures of Teacher-Student Relations on Use of Self-Contained Classroom, Under Different Control Conditions, Grade 6

(Sample = 433 schools; b = unstandardized regression coefficient; Beta = standardized regression coefficient; t = test statistic)

	Effect of Self-Contained Classrooms								
	(no controls)			(control par. ed.)			(add 4 more controls)		
Dependent Variable	b	Beta	t	b	Beta	t	b	Beta	F
Teacher-student relations scale (14 items)	28.4	.145	3.0	30.9	.158	3.3	21.9	.112	2.2
My teachers understand me	5.8	.198	4.2	5.8	.198	4.1	5.8	.199	3.8
My teacher cares about my class	1.4	.107	2.2	1.5	.114	2.3	1.3	.097	1.8
I feel very happy talking to my teacher	3.0	.130	2.7	2.8	.123	2.5	2.3	.100	1.9
My teacher does not make me feel I cannot do good work	6.6	.205	4.4	6.6	.206	4.3	5.8	.179	3.5
My teachers expect too much from me	3.2	.170	3.6	3.3	.174	3.6	3.4	.175	3.4

Table 3

Summary of Multiple Regression Analyses of Measures of Teacher-Student Relations on Average Number of Teachers Per Student, Under Different Control Conditions, Grade 6

(Sample = 433 schools; b = unstandardized regression coefficient; Beta = standardized regression coefficient; t = test statistic)

	Effect of Number of Teachers per Student								
	(no controls)			(control par. ed.)			(add 4 more controls)		
Dependent Variable	b	Beta	t	b	Beta	t	b	Beta	t
Teacher-student relations scale (14 items)	-14.8	-.200	4.2	-15.8	-.213	4.5	-11.6	-.158	2.8
My teachers understand me	-2.3	-.208	4.4	-2.3	-.209	4.4	-2.5	-.229	4.1
My teacher cares about my class	-0.6	-.124	2.6	-0.6	-.131	2.7	-0.6	-.110	1.9
I feel very happy talking to my teacher	-1.1	-.130	2.7	-1.1	-.122	2.5	-0.7	-.080	1.4
My teachers let my try out my ideas	-1.4	-.146	3.1	-1.5	-.162	3.4	-1.3	-.136	2.4
My teacher does not make me feel I cannot do good work	-2.7	-.221	4.7	-2.7	-.221	4.6	-2.3	-.192	3.4
My teachers expect too much from me	-1.2	-.166	3.5	-1.2	-.170	3.5	-1.2	-.169	3.0

Table 4

Summary of Multiple Regression Analyses of Measures of Student Reactions to Specific Courses and the Number of Teachers per Student, Under Different Controls, for Grade 6

(Sample = 433 schools; b = unstandardized regression coefficient; Beta = standardized regression coefficient; t = test statistic)

	Effect of Average Number of Teachers per Student								
	(no controls)			(control par. ed.)			(add 4 more controls)		
Dependent Variable: How happy do you feel:	b	Beta	t	b	Beta	t	b	Beta	t
When you learn to read in school	-0.6	-.080	1.4(NS)	-0.5	-.068	1.4(NS)	-0.9	-.011	0.0(NS)
When you write stories in school	-0.3	-.046	0.9(NS)	-0.5	-.061	1.3(NS)	-0.1	-.013	0.2(NS)
When you learn arithmetic in school	0.6	.065	1.3(NS)	0.9	.100	2.1	1.0	.114	2.1
When you learn social studies in school	2.4	.274	5.9	2.7	.298	6.4	3.2	.362	6.7
When you learn about science in school	2.0	.182	3.8	2.1	.195	4.1	2.5	.229	4.0

Table 5

Summary of Multiple Regression Analyses of Average Student Test Scores in Selected Subjects on Number of Teachers per Student, Under Different Control Conditions, Grade 6

(Sample = 433 schools; b = unstandardized regression coefficient; Beta = standardized regression coefficient; t = test statistic)

	Effects of Number of Teachers per Student											
	(7 SES Controls)			(Add Reading Test)			(Add Math Test)			(Add Enrollment Size)		
Dependent Variable:	b	Beta	t	b	Beta	t	b	Beta	t	b	Beta	t
Science Test1	-.065	-.042	1.2	+.101	+.066	2.0	+.119	+.077	2.4	+.087	+.056	1.5
Science Test2												
(Environment Knowledge)	-.070	-.050	1.4	+.103	+.073	2.3	+.116	+.083	2.7	+.119	+.085	5.5
Social Studies/Citizenship	-.233	-.112	3.0	+.044	+.021	0.7	+.075	+.036	1.2	+.063	+.030	0.8